



**BROOKS**

INSTRUMENT DIVISION

EMERSON



ELECTRIC

HATFIELD, PENNSYLVANIA 19440

In Canada: Brooks Instrument Canada Limited,  
Scarborough, Ont.

## A BRIEF GUIDE TO THE BROOKS PRODUCT LINE

Brooks offers a broad line of flow measurement instrumentation. Included are flow indicating, alarm-signaling, and transmitting units for high temperatures, high pressures, and corrosive service . . . for virtually any processing or laboratory application.

Literature describing other  
BROOKS products:

- High Pressure Indicating Meters, DS-1400
- High Pressure Purge Meters, B-132
- By-Pass Rotameters—for large flow rates, B-116
- Flow-Rate Alarms—for signaling or simple control functions, B-175
- Level Control Instruments—for indication, alarm, transmission, and control, DS-5200
- Specific Gravity Indicators, DS-7000
- Precision Glass Products, Instrument Components, and Services—If you have an engineering problem that the unique properties of glass can solve, or if you have a production problem with precision glass, write for Bulletin B-30-2.

## FULL-VIEW® ROTAMETERS . . . for



Full-View indicating meters feature Brooks' exclusive dowel-pin, side-plate case construction that produces a self-aligning, torque resisting assembly. Safety glass shielding gives excellent protection in operation. Overall flow range (water): 0.05 cc/min. to 200 GPM. Bypass meters are available for flows from 70 to 7000 GPM. For details, request Bulletin SP-1100. O-ring seal type Full-View meters are described in DS-1112A.

Model 1110 Full-View Rotameter

## FULL-VIEW®, O-RING-SEAL ROTAMETERS



Built to withstand the stresses and vibration common in industrial piping installations, these Model 1112 meters permit tube removal or replacement without dismantling the meter case or removing the meter from the pipe line. Available in sizes to handle a range of maximum flow rates from 643 cc/min to 98.6 GPM of water; 55.6 SCFH to 217.7 SCFM of air. Stainless steel wetted parts are standard. Request Bulletin DS-1112 for additional details.

Model 1112A Full-View, O-Ring meter

## ECONOMY MODEL 1307 O-RING-SEAL ROTAMETERS



Designed for non-corrosive applications where metering accuracy requirements are not severe, these meters are available with alarms. Maximum flow ranges are from 0.78 to 49.55 GPM of water and 3.17 to 217.7 SCFM of air; standard accuracy  $\pm 2\%$  of full scale; depending on size, safe working pressure is 350 psig at 200°F. Window shields and panel mountings are optional. For more details, request DS-1306.

Model 1307 (without shielding)

## AR-MET® ROTAMETERS . . . for high pressures, high temperatures, or large flows



Model 3621-5500 Ar-Met Rotameter with pneumatic transmitter

Ruggedly built Ar-Met meters have precision, pressure-formed, metal metering tubes. They feature interchangeable extensions — an improved magnetic follower for indication and alarm, pneumatic or electric transmission and integration. Maximum flow rates up to 3200 GPM (water); pressures to 6000 psi at 200°F. Designed for corrosive service. For more details, request Bulletin SP-3600.

## AR-MET® Thru-Flow ROTAMETERS



These compact metal-tube meters provide a straight through, unobstructed flow path without stagnant pockets. Ideal for solids-bearing liquids which tend to settle or crystallize in crevices, these meters are used with close-coupled indicating, transmitting, or integrating instruments. Range of maximum flows: from 0.8 to 2500 GPM (water); from 3.5 to 10,375 SCFM air (STP). For more details, request Bulletin DS-3611.

Model 3611-5520X Ar-Met Thru-Flow Rotameter with electric transmitter

## ROTAMETER FLOW RATE TRANSMITTERS



Pneumatic transmitter with Full-View Rotameter (Model 1110-5500)

Used in conjunction with Full-View and Ar-Met rotameters, the Brooks transmitters give a truly linear signal based on actual flow rate. Available in pneumatic and electric models — both are fully compatible with all receiving instruments. Also available is an integrator for automatic batching operations and automatic billing or recording on punched cards or tape. For more details, request Bulletin SP-5500.

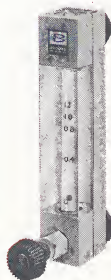
## BROOKS-MITE\* AND SHO-RATE\* PURGE METERS . . . for small flow indication



Brooks-Mite low-cost meters are made of chemical-resistant acrylic plastic, and are available with Flo-Mite\* needle valves for installation in inlet or outlet. Sho-Rate meters feature rotatable end fittings, have side-plate construction and "slip-out" metering tubes. For full details, request Bulletin SP-1300.

Model 1350-V Sho-Rate "50" meter  
Model 2001-V Brooks-Mite meter

## E/C PURGE METERS . . . for low cost, small flow indication

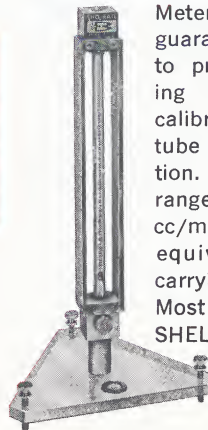


E/C flowmeters utilize a single aluminum frame of extruded channel-lock construction and interlocking end blocks. A wide choice of wetted insert materials provides flexibility of application at lowest cost.

E/C meters are offered in 50, 150, and 250 mm scale lengths and in combinations of about 30 different interchangeable tubes and floats to cover flow ranges from 0.14 GPH to 2078 cc/min of water (equiv.). Fully described in Bulletin SP-1500.

Model 1550-V E/C meter

## FLOW TEST KITS . . . a wide choice of portable kits for laboratory, re- search, and pilot plant

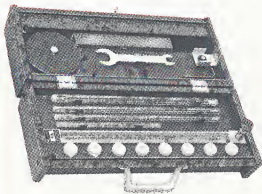


Metering floats and tubes guaranteed interchangeable to provide highest metering accuracy. Individual calibration curves for each tube and float combination. Kits available for wide range of flows from 0.05 cc/min. to 42.5 gpm (water equivalent). Convenient carrying and storage cases. Most models — OFF-THE-SHELF DELIVERY. For full details, request Bulletin B-1200.

Model 1211-1355 Sho-Rate "150" Kit



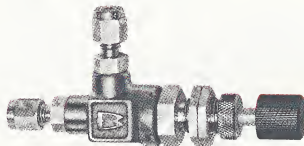
## LABORATORY FLOW TEST KITS . . .



These rotameter kits are designed for a wide range of bench type metering applications. They contain 16 interchangeable rotameter tube and float combinations to measure flow rates from 0.06 to 1944 cc/min of water and 5.1 cc/min to 129 SCFH of air. Rangeability is 10 to 1; calibrated accuracy is  $\pm 1\%$  of max. scale; maximum pressure rating is 200 psig at 250°F. Bulletin DS-1214 contains full information.

Model 1214-1500 E/C Laboratory Flow Kit

## BROOKS ELF\* NEEDLE VALVES . . . set flow rates precisely



High resolution for metering extremely low flows in demanding laboratory and instrumentation applications. Exclusive tapered needle design; flow proportional to stem position. Bubble-tight, O-Ring seal shut-off can't be damaged by over-tightening. Forged bodies in chrome brass or stainless steel, angle or straight models. Six interchangeable needles for flow ranges up to one cu. ft./min.

Fully described in Bulletin DS-8501A.

Model 8501 ELF Needle Valve

## ELF\* FLOW CONTROLLERS . . . for gas service

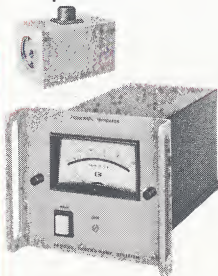


Designed to accurately adjust and maintain small gas flows for analytical instrumentation, these units have an integral, precision needle valve with smooth non-reversing flow characteristics and a high turns-to-lift ratio. Available with interchangeable valve needles for capacities to 3600 scc/min of helium at 50 psig. Easily panel mounted. Bulletin DS-8743 gives full details.

Model 8743 ELF Flow Controller

## BROOKS-THERMAL FLOWMETER . . .

for very low flow rates of gases and liquids

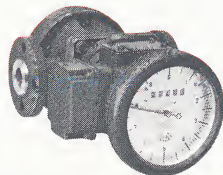


Series 5800 Electric Flowmeter measures very small flow rates using a thermal conductivity Wheatstone Bridge to sense the flow. There are no moving parts in the

flow stream. Rates of flow as low as 5 cc/hr of water and 5 standard cc/min. of air can be measured (less in special meters). Flow rate indication and 0-10 mv dc analog output. For full details, request DS 5800.

Model 5800 Thermal Meter  
Model 5800 Rate Indicator

## BROOKS-OVAL POSITIVE DISPLACEMENT FLOWMETERS



The Brooks-Oval positive displacement flowmeter measures total

flow with an accuracy of  $\pm 1/2\%$  or better. The matched oval gear metering elements provide true positive displacement metering and permit a choice of construction materials including 316 Stn. Stl. Suitable for flow rates from 5 to 70,000 GPH, these flowmeters can be furnished with accessories for batching, flow rate indication, and control. For full details, request DS-OVAL-2.

Model LW-11 Oval Meter with revolving pointer and totalizer

## BROOKS—FUEL OIL METERS



The TOKICO-CC Instrument is a positive-displacement, totalizing meter for low flow rates of fuel oils and other lubricating, non-corrosive liquids. Precision machining of working parts assures essentially frictionless

operation. An electrical contact head is available to actuate a remote, digital readout. Capacities are 0.06 to 2.6 GPH. Registers have 6 digits and read to 0.001 gallons or 0.01 liters. For more details, request Bulletin DS-PO2.

Model PO2 TOKICO-CC Meter

## BROOKS-MAG MAGNETIC FLOWMETERS . . . for metering conductive fluids



The BROOKS high accuracy magnetic flowmeter provides obstructionless measurement for difficult-to-handle fluids. As fluid moves through the uniform magnetic field of the detector head, a voltage is generated exactly proportional to the fluid velocity. Secondary equipment is available for recording, indicating, integrating, controlling and batching, either singly or in any combination of these functions that may be required. Complete systems are also available for mass flowmetering, per cent solids determination and special applications requiring development. For more details request DS-346.

Model 346 Flowmeter

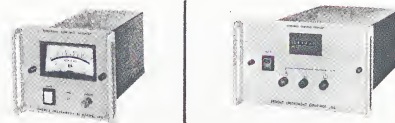
## BROOKS TURBINE FLOWMETERS . . . for fluid metering & control



The Brooks turbine meter is a precision flowmeter which generates a frequency or pulse output absolutely proportional to flow rate. With inherent high resolution and accuracy this flowmeter is useful for rapid digital measurements. Accuracy is  $\pm 0.3\%$  or better. The flowing fluid itself is used to balance the turbine rotor thus eliminating any thrust bearings. Journal bearing or ball bearing construction may be specified. Turbine flowmeter output is millivolt a-c frequency. For complete details, request Bulletin DS-HP & DS-HPB.

Model HP-12M & Model HP-64C Turbine flowmeters

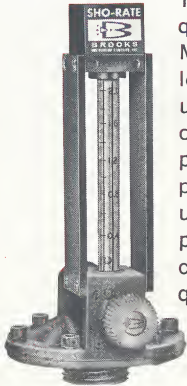
## READ-OUT INSTRUMENTS FOR TURBINE METERS . . . a full line of service-proved models



Instruments are available for panel mounting, rack mounting, and portable use. They are compatible with all types of existing electronic control equipment. A rate indicator-converter displays flow rate on a panel meter and provides 0-10 mv dc analog output. Totalizers and batch totalizers have pulse dividers in order to read directly in gallons or pounds. A pre-amplifier will provide a 10 volt square wave output of the flowmeter frequency for use with digital instruments. Bulletin B-40 gives full details.

Model 4100 Flow Indicator and D-C converter  
Model 4410 Computing Totalizer

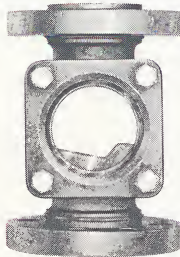
## SELF-CONTAINED ROTAMETERS/ CONTROLLERS



These compact units require no external piping. Made of brass or stainless steel, they are rated up to 12 GPM (water) or 48 SCFM (air) at pressures up to 1500 psig. They are low-cost units and are easily panel-mounted. For complete details, request Bulletin B-8800.

Model 1350-8800 Rotameter/Controller

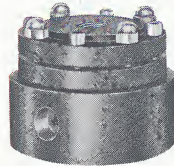
## BROOKSIGHT SIGHT FLOW INDICATORS... for visual indication of flow conditions in piping systems



Available in three models: plain, drip lip, and flapper with flanged or threaded connections — in cast iron, steel, or stn. stl., all Brooksight indicators have two, high-strength tempered glass viewing windows. Flanged units (except cast iron models) have fully rotatable, split-ring flanges to allow precise positioning. Bulletin DS-8000 gives more details.

Model 8001 Plain Indicator

## BROOKSEAL\* DIAPHRAGM SEALS ... for protection of pressure devices in corrosive services



Designed for in-line mounting, these seals consist of a convoluted slack diaphragm with an inert fluid fill between the diaphragm and the pressure device. This provides precise transmission of the process pressure. Available in wide range of body and diaphragm materials . . . threaded, socket-welded, or flanged . . . pressure to 2500 psig at 450°F. Optional removable clean-out design, bleed-off valve, over-range protection, and self-sealing gage union. Bulletin DS-9320 gives design specifications.

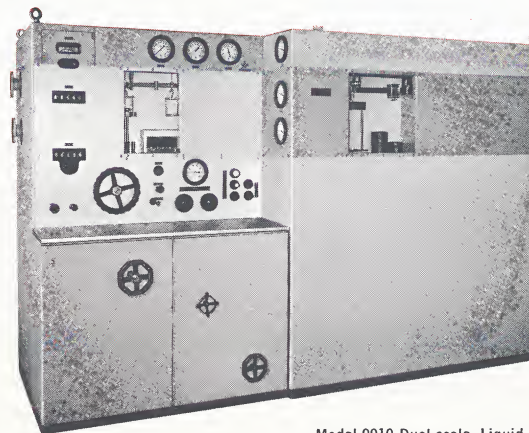
Model 9334 clean-out type diaphragm seal



## BROOKS DYNAMIC WEIGHT/TIME CALIBRATORS

... for testing and certifying flow measuring devices.

Brooks Dynamic Liquid Weight/Time Calibrators are specifically designed for testing and certifying the accuracy of many types of flow measuring devices. This system employs a fluid storage tank, a single pump, and one or two weighing systems depending on flow range. Accuracy may be correlated to within  $\pm 0.15\%$  of National Bureau of Standards. Flow ranges of 25 to 15,000 PPH and 5 to 150,000 PPH are available. Simplicity of operation requires the use of only one operator to record information on weight collected, total pulses, time interval, temperature, back pressure, output frequency and millivolt level. For further details, request DS-9900.



Model 9910 Dual scale, Liquid Calibrator

## **VOL-U-METER® GAS FLOW CALIBRATORS, Model Series 1050**

**. . . For precise determination of volumetric gas flow rates in the calibration of rotameters or other gas flow metering equipment.**

These calibrators are volumetric gas collecting devices used to calibrate flow rate instruments with capacities between 1 and 24,000 standard cubic centimeters per minute. The inert gas from the meter being calibrated is collected under a mercury-sealed piston, in a precision bore glass tube. Accurate indication of the volume of gas collected in a given time interval is made by timing the movement of the piston adjacent to a scale graduated in volumetric units. The seal between the piston and the cylinder is formed by a mercury "O-Ring" which permits essentially frictionless movement of the piston thus insuring

\*U.S. Patent #2,927,829

constant back pressure on the sample. Back pressure and sample temperatures are readily determined to facilitate correction of sample volume to standard conditions.

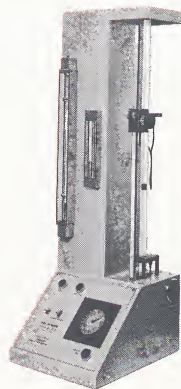
**DESIGN FEATURES . . .** Precision accuracy — within 0.2% of indicated volume (Certification of accuracy may be furnished based upon use of equipment and procedures traceable to the Bureau of Standards) . . . No vapor pressure corrections required . . . Patented frictionless mercury "O-Ring" seal.\* For details, request DS-1050 and DS-1052.



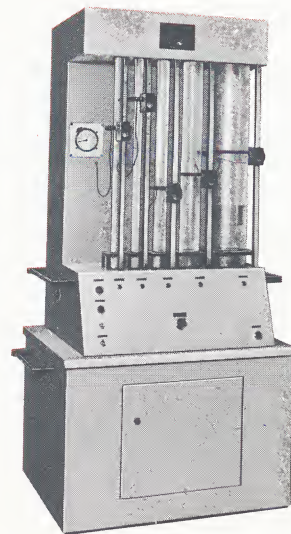
Model 1052 Manual, bench-type calibrator



Model 1055 Manual, bench-type calibrator



Model 1075 Single-tube, automatic calibrator



Model 1051-5 Multi-tube, automatic calibrator

## DYNAMIC WEIGHT/TIME CALIBRATION FACILITY

The Brooks Dynamic Weight/Time calibrator consists of a pit-mounted reservoir of 20,000 gallons capacity, a 150 horsepower centrifugal pump capable of delivering more than 4,000 gallons per minute of water against a 120 foot head, and two scale mounted weigh tanks having volumes of 700 and 4,000 gallons. The system is capable of precise calibrations of flow rates ranging from 100 gallons per minute to in excess of 4,000 gallons per minute. Accuracy of the calibrating elements are directly traceable to the National Bureau of Standards. Calibrations to  $\pm 0.10\%$  of flow rate are possible with repeatability of even higher precision.

Additionally, the facilities are offered for use to other manufacturers and laboratories requiring precision calibration and research in these flow ranges.



\*Trademark of Brooks Instrument Division Emerson Electric Co.